

# Horizontally sliding door.

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## Abstract of EP0173829

1. A sideways sliding gate, which has a framework (3) which is box-like in cross-section, with electrical conductors arranged therein for control and indicator devices, and which is guided by stationary uprights on the framework (3) a guide rail (6) running in the gate's longitudinal direction, which guide rail encloses a guide channel, which is rectangular in cross section, for the accommodation of an energy supply chain (7) in the form of a stud-link chain of plastics and at least one electrical cable (15) contained therein, in that one end of the chain is fixed with respect to the longitudinally movable gate, guided in the guide rail, and the associated end of the cable held in the chain is guided through a longitudinal slot (10 or 20) of the guide rail and connected to a current supply device (8) connected to the upright (2), while the other end of the chain is secured on the framework and the associated end of the cable is passed through a window (17) in the wall of the framework and also connected to the electrical conductors provided in the framework, the chain and cable forming a loop enclosed by the guide rail in the open position of the gate.

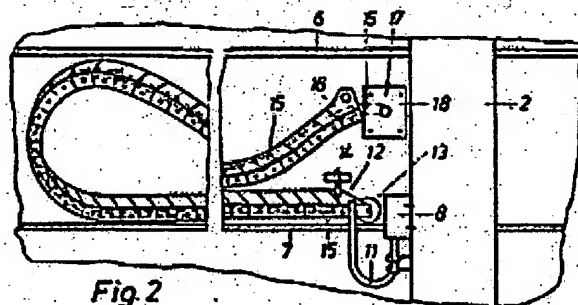


Fig. 2

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Side sliding gate the invention relates to a side sliding gate, which exhibits an inertial belt with electric lines for control and display devices, arranged box shaped in the cross section, therein, and at stationary post guided is.

There is side sliding gates aforementioned type in the most different embodiments known, for example as cantilevered side sliding gates, which outside extended opening-wide over the gate are and are in the closed state through at the gate extension attacking Stützund guide rollers held. Other embodiments are in the gate posts held, whereby frequent supporting and guide rollers arranged in double posts are provided, those at the upper and bottom belt of the gate engage.

For the Eetrlieb of such side sliding gates series of control and display devices become required, which among other things also serve the accident prevention. So the gates are to be equipped with display devices, which significant shows whether the gate is in movement and/or whether the Tora impulse operated becomes or not. Such display devices can consist for example of turn signals, which are distributed arranged at into the gate opening putting forward the end of the gate or however in or reciprocal along the inertial belt. Usually side sliding gates become henceforth equipped with pressure controlled limit switches, which < with reaching the closed position of the gate; RTI ID=2.1> betestigt < /RTI> and the simultaneous will serve also the accident prevention, in order to stop the drive of the gate, if the gate becomes moved against a resistance located in the gate opening. These control and display devices important for the working reliability and the reduction of the danger of accident fed over electric lines, which are in the box shaped inertial belt of the gate accommodated usually, become. The power supply to these electric lines made with known embodiments of the side sliding gates usually over sliding contacts or < RTI ID=2.2> Sharpening cable, < /RTI> the two relative are trouble-prone.

With < RTI ID=2.3> Schleifkontakten < /RTI> the other difficulty that parallel must become the side sliding gate in corresponding foundations a Stromzuführungsschiene as stationary current inlet arranged, insists on which arms excellent from the inertial belt with corresponding sliding contacts pushes away. Beside a very large up < RTI ID=2.4> --< /RTI> the drawback wound in purchase taken become for this type of the power supply must with this embodiment that interruptions of circuit can occur, which are unavoidable with less frequent operation of the gate by oxidation of the sliding contacts. With a power supply by means of trailing cables it is necessary to make a separate housing of the trailing cable outside of the gate so that also for this a significant building expenditure is required. In the case of a power supply by means of trailing cables, which become unwound on a winding device up and, additional expenditures for the operation of the winding drum in response of the gate manipulation result. Also with arrangement of a winding drum it is required to accommodate with the gate moved cables in a corresponding protective envelope which must extend over the entire dragging way of the cable.

The invention is the basis the object to train a side sliding gate of the introductory mentioned type so < RTI ID=3.1> aae < /RTI> the power supply to the control and display devices over the electric lines with extraordinary small effort and largest safety against susceptibility to interference an ensured, arranged in the inertial belt, becomes.

To the solution of foregoing object the introductory side sliding gate mentioned marks itself according to invention by the fact that lateral at the inertial belt one < in; RTI ID=3.2> Torlängsrichtung < /RTI> longitudinal guide rail provided is, which < in the cross section a rectangular; RTI ID=3.3> Führungskanal < /RTI> for the receptacle of an energy guidance chain in the form of a bar link chain from plastic and at least an electric cable held in the fact it encloses that end of the chain is a stationary guided opposite the prolonged-movable gate in the guide rail and the associated end of the cable held in the chain is by a longitudinal slot of the guide rail passed and to a current feed mechanism connected connected with the post, while the other end of the chain at the inertial belt is fixed and < RTI ID=3.4> zugehorige < /RTI> End of the cable by a window in the wall of the inertial belt passed as well as with the electric lines connected planned in the inertial belt is, whereby the chain and that cables in the open position of the gate a loop umschlossene of the guide rail form.

Although the energy guidance chains mentioned the bottom designation < RTI ID=4.1> Kabelschlepp < /RTI> since more than 25 years of world-wide known and in particular for the supply mobile parts in machine tools and such. inserted are, such bar link chains in connection with side sliding gates so far no application found, because obvious of the professional world not recognized is that such chains are with the described housing in along the inertial belt longitudinal guide channel also for the power supply of the control and display devices of Schiebetoren a suitable, if the power supply likewise specified < over stationary connected with the post; RTI ID=4.2> Stromzuführungseinrichtung < /RTI> made.

By according to invention planned the formation a made protected housing of the bar link chain and the cable held therein whereby the bending radius of the cable will become so adjusted with the operation of the gate by the bar link chain certain and by corresponding choice of the bar link chain can that one < RTI ID=4.3> Überbean < /RTI> spruchung the cable by bending loads avoided and thus an interruption of circuit prevented become. Made by the described formation a stationary terminal cable end at the current feed mechanism of the post, while the other end becomes likewise again fixed with the electric lines connected longitudinal in the inertial belt. By the fixed connections of the two cable ends the drawbacks and risks of the interruption of circuit with safety, arising with sliding contacts, become prevented. For the cable only the guide rail planned at the inertial belt is required, so that also the additional protection device except the half gate, necessary with use of a trailing cable, as well as if necessary. necessary up and completion mechanisms for < RTI ID=5.1> Schleppkabel < /RTI> not applicable. Since the cable which can be accommodated in the bar link chain can exhibit a relative small electric conductive cross section for the power supply, it is possible to use a relative narrow bar link chain so that also the guide rail can become relatively narrow formed and thus at the inertial belt of the gate hardly remarkably into appearance steps. Practical trials have shown that a bar link chain from 1,5 to 2 cms width complete for the receptacle < RTI ID=5.2> Stromführungskabels < /RTI> to Steuerungsund display devices is sufficient, and < RTI ID=5.3> dae < /RTI> by < RTI ID=5.4> Biegeradius < /RTI> the cable and the chain certain height of the guide rail in an order of magnitude from 12 to 15 < RTI ID=5.5> Art < /RTI> complete is sufficient. Trials with a side sliding gate and a guide rail in the aforementioned order of magnitude have shown that even after several ten thousand < RTI ID=5.6> Bewegungsspielen < /RTI> no impairment of the power supply and also no damage of the cable made are.

< RTI ID=5.7> Zweckrr.älg < /RTI> is it, if as box profile the formed < RTI ID=5.8> Führur, gsschiene < /RTI> exhibits the longitudinal slot

in the torabgewandten side wall as well as downward is in a apron-like resilient deformable sealing strip pointing with its free longitudinal edge covered. The end of the cable connected with the current feed mechanism in the post can become for example by a tube resistant to bending connected with the post passed, which is the gap up to in the guide rail the end held of the energy guidance chain, stationary mentioned by the post fixed connected by, opposite longitudinal movements of the gate extended and with this end.

With another embodiment is provided that the guide rail formed as box profile exhibits the along slot in the wall pointing downward, and that in the side walls of the guide rail with the window in the inertial belt aligned windows are provided, by which the window is provided with a releasable cover in the torabgewandten side wall.

With the formation of the gate with the longitudinal slot in the torabgewandten side wall of the guide rail about tornittig arranged window is in the wall of the inertial belt from the outside accessible by the longitudinal slot, so that required with this embodiment only a corresponding window is in the torzugewandten side wall of the guide rail. Becomes provided against it if the longitudinal slot in the wall of the guide rail pointing downward in accordance with the latter embodiment, then it is in the described manner required to plan corresponding corresponding window openings in the two side walls of the guide rail so that the window for the execution of the cable, planned in the inertial belt, is from the outside more achievable to the lines located in the inertial belt.

Particularly < RTI ID=6.1> zwecEm, äBig< /RTI> is it, if the end of the chain held at a carriage, equipped stationary opposite longitudinal movements of the gate, with rollers is held, which pushes away on the walls of the guide rail. The other end of the chain can be in close proximity of the window in the inertial belt at the wall of the guide rail fixed.

The drawing shows an embodiment of the invention in schematic representation.

Show: Fig. < RTI ID=6.2> 1< /RTI> the side view of a side sliding gate according to the invention, Fig. 2 in enlarged representation a cutout from the gate in accordance with Fig. 1 with a partial profile by the guide rail, Fig. 3 a cross section by a first execution form as box profile < RTI ID=7.1> ausgebildeter.< /RTI> Guidance, Fig would seem. 4 a cross section by another embodiment of the box shaped guide rail.

In the Fig. 1 shown side sliding gate is in the represented example as < RTI ID=7.2> freitragendes< /RTI> Schiebtor embodied, which on roller fixtures 1 pushes and is between two stationary posts anchored on both sides the gate in the soil 2 guided away.

The gate exhibits a box shaped bottom belt 3, are provided in which the electric lines for control and display devices, to those in the Fig. 1 schematic shown turn signals < RTI ID=7.3> 4< /RTI> belong, which in the bottom belt 3 of the gate arranged can to be and light up with a movement of the gate in intervals. As control devices can at the gate after Fig. 1 on pressure responsive or if necessary. also contactless inductive working switches in the gate cross-beam 5 provided its, which can serve as limit switches for the closing movement and simultaneous for the accident prevention in the case of the rear-end collision of the gate against an obstacle. The formation and arrangement of such switches is actual known, so that her in the Fig. 1 not in detail shown are.

At a side of the lower inertial belt 3 of the gate is one in < RTI ID=7.4> Torlängsrichtung< /RTI> longitudinal guide rail 6 fixed formed in form of a box profile, itself in dargestelltn the example over the whole length of the gate sheet extended. This guide rail encloses a rectangular guide channel, that to on would take to one in the Fig. 1 dotted represented Ener < RTI ID=8.1> gleföhrungskette< /RTI> serves 7 in the form of a bar link chain from plastic and at least an electric cable held therein.

At the post 2 one is < RTI ID=8.2> Stromzuföhrungseinrichtung< /RTI> 8 provided, which in form of a terminal box formed can be and which is over 2 current guidance cables passed by the hollow post 9 with a source of power connected not shown in the drawing.

Details < RTI ID=8.3> Energieföhrungskatte< /RTI> 7 in the arrangement after Fig. 1 become in connection with Fig. 2 described, which shows a partial profile in enlarged representation by the guide rail 6 in the manner that in Fig. 1 the Beschauer directed side wall is cut off.

From the Fig. 2 is again the stationary posts 2 for the gate sheet apparent with the current feed mechanism 8 formed as terminal box. The guide rail 6, which course-turned in manner with it, not represented more near, longitudinal wall of the lower inertial belt 3 fixed connected are, points on its underside in accordance with the representation of the cross section in Fig. 3 a continuous longitudinal slot 10 up, by through itself a stationary tube held 11 extended connected with the current feed mechanism 8, which < with an end member of the energy formed as carriage 12; RTI ID=8.4> föhrungskette< /RTI> 7 fixed connected is. By the tube of 11 itself with the current feed mechanism 8 and 9 cables 15 connected extended through in this mechanism with the Zuföhrungskabel, which are 7 passed by the single bar members of the energy guidance chain, so that it of the energy guidance chain 7 in more known Manner is enclosed and in this chain safe against any outside influences held becomes. The end member of the energy guidance chain ausgetildete as carriage 12 is in accordance with the Fig. 2 and 3 with guide rollers 13 and 14 equipped, which push on the inside of the walls of the guide rail 6 away, so that the carriage 12 with a sliding movement of the gate sheet by that stationary tube held 11 in its position held and large frictional forces between the carriage 12 and the Föhr does not < RTI ID=9.1> rungsschiene< /RTI> 6 to arise can.

The other end of the energy guidance chain 7 is 6 fixed, more immediate beside windows 17 intended in the wall mentioned of the guide rail and hereby corresponding also in the wall of the bottom belt 3, with an end member 16 at the rear wall of the guide rail, which is 18 covered by a cover plate.

By the cover < RTI ID=9.2> 18< /RTI> and by the window 17 is < in the energy guidance chain of 7 cables held 15 passed and with in the bottom belt 3 located the electric lines for; RTI ID=9.3> eteuerungs< /RTI> and < RTI ID=9.4> Anzeigeeinrichtun< /RTI> towards connected. < RTI ID=9.5> Fensterabdeckung< /RTI> thereby part one can do 18 < RTI ID=9.6> Klenmkastens< /RTI> form, in order to connect the electric cable 15 with the electric lines mentioned in the bottom belt 3.

The energy guidance chain 7 forms a loop, the which itself corresponding sliding movement of the gate within the guide rail displaced in each case within the guide rail 6.

The window opening 17 is < in the represented example about tornittig arranged and the overall length of the energy; RTI ID=9.7> föhrungskette< /RTI> 7 so dimensioned that it corresponds about to the half gate-prolonged. This is the most favorable embodiment, because one rungskette thereby with a relative short Energieföhr and gets along thus also with a relative short cable 15 for the power supply of the controllings and display devices of the gate.

Over the terminals of the cable 15 with in the supporting bottom belt 3 installed electric lines make and/or. In the trouble to examine to be able, it is with the embodiment after Fig. 1 to 3 required, also on in Fig. 1 the Beschauer course-turned to thus plan the torabgewandten side of the guide rail 6 a window with a releasable cover like it in Fig. 1 with 19 indicated is.

The dimensions of the guide rail formed as box profile depend on the strong one and pliancy of the cable 15. In response of it the energy guidance chain is to be selected, those the radius of curvature of the loop for the supply of the cable 15 certain.

An execution variant of the guide rail 6 is in Fig.

4 shown. With this formation a longitudinal slot is 20 provided in the torabgewandten side of the guide rail, which < by a apron-like, resilient; RTI ID=10.1> vefformbaren< /RTI> Sealing strip 21 covered is. By this guide slot 20 extended itself that somewhat differently for this than

in the Fig. 1 and 2 represented tube 11, which is 7 connected within the guide rail 6 again with the end member 12 of the energy guidance chain formed as carriages. In the example of the Fig. 4 the carriage 12 runs in an upper chamber 22 of the guide rail 6.

With this embodiment that is the carriage 12 associated end of the energy guidance chain 7 suspended at the carriage so arranged that the chain comes to lie in the space below the chamber 22. It is <, with others; RTI ID=10.2> Worten< /RTI> only the carriage 12 in the chamber 22 held and guided, during itself the chain in below these Chamber located space extended and there already in connection with the Fig. 1 to 3 loop specified forms, the displaced corresponding with a sliding movement of the gate.



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Claims

1. Side sliding gate, which < one in the cross section; RTI ID=12.1> kastenförmig < /RTI> towards inertial belt with electric Lei do towards for control and display devices on points and at stationary posts, arranged therein, guided is, D A D u r C h g e k e n n z e i C h n e t that provided since lich is guide rail (6), ongoing at the inertial belt (3) one in gate longitudinal direction, which a guide channel for those, rectangular in the cross section  
Receptacle of an energy guidance chain (7) in the form of a bar link chain from plastic and at least an electric cable (15), held therein, encloses that end of the chain is a stationary opposite along movable gate in the guide rail the guided and the associated end of the cable held in the chain by a longitudinal slot (10 and/or. 20) the guidance would seem < passed and to one with the post (2) connected; RTI ID=12.2> Stromzuführungseinrichtung < /RTI> (8) angeschlos sen is, while the other end of the chain at support the belt fixed is and the associated end of the cable is by a window (17) in the wall of the inertial belt passed as well as with in support belt intended electric lines connected, whereby the chain and the cable in the open position of the gate form a loop umschlossene of the guide rail.
2. Gate according to claim 1, D A D u r C h g e k e n n z e i C h n e t that the window (17) in the wall of the inertial belt (3) is about tormittig arranged and the overall length of the energy guidance chain (7) corresponds about to the half gate-prolonged.
3. Gate according to claim 1 or 2, D A D u r C h g e k e n n z e i C h n e t that the guide rail (6), formed as box profile, exhibits the longitudinal slot (20) as well as in the torabgewandten side wall in downward a apron-like, resilient deformable pointing with its free longitudinal edge  
Sealing strip (21) covered is.
4. Gate according to claim 1 or 2, D A D u r C h g e k e n n z e i C h n e t that the guide rail (6), formed as box profile, exhibits the longitudinal slot (10) in the wall pointing downward, and that in the side walls of the guide rail with that  
Windows (17) in the inertial belt (of 3) aligned windows provided are, by which the window (19) is provided starting from covering in the torabgewandten side wall with a releasable.
5. Gate after one of the claims 1 to 4, D A D u r C h g e k e n n z e i C h n e t that the end of the chain (7), stationary opposite the prolonged-movable gate, is in one with rollers (13,14) equipped carriages (12) held.